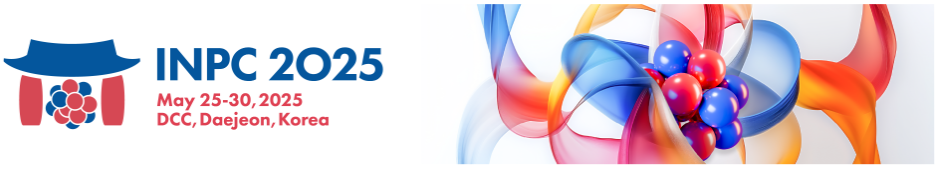

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Deciphering the spatial and spin structures of (anti-)hypertriton in heavy-ion collisions

Monday, 26 May 2025 14:25 (15 minutes)

The hypertriton($^3_\Lambda$H), a bound state of a proton, a neutron, and a Λ hyperon, serves as a unique probe for studying hyperon-nucleon interactions and the behavior of strange quarks in dense nuclear matter. In heavy-ion collisions, the binding energy and spin of $^3_\Lambda$H have been experimentally measured, albeit with significant uncertainties. We propose a novel method to extract detailed information about their wave function by analyzing the production and transverse momentum (p_T) spectrum of (anti-)hypertritons using the coalescence model. Furthermore, light hypernuclei can also be polarized in non-central heavy-ion collisions, similar to unstable hadrons. We suggest that the global polarization of (anti-)hypertritons can be utilized to decipher their internal spin structures in heavy-ion collisions. This study not only provides a understanding of the spatial and spin structures of (anti-)hypertritons but also offers new insights into the dynamics of hyperon-nucleon interactions and the polarization mechanisms in heavy-ion collisions.

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